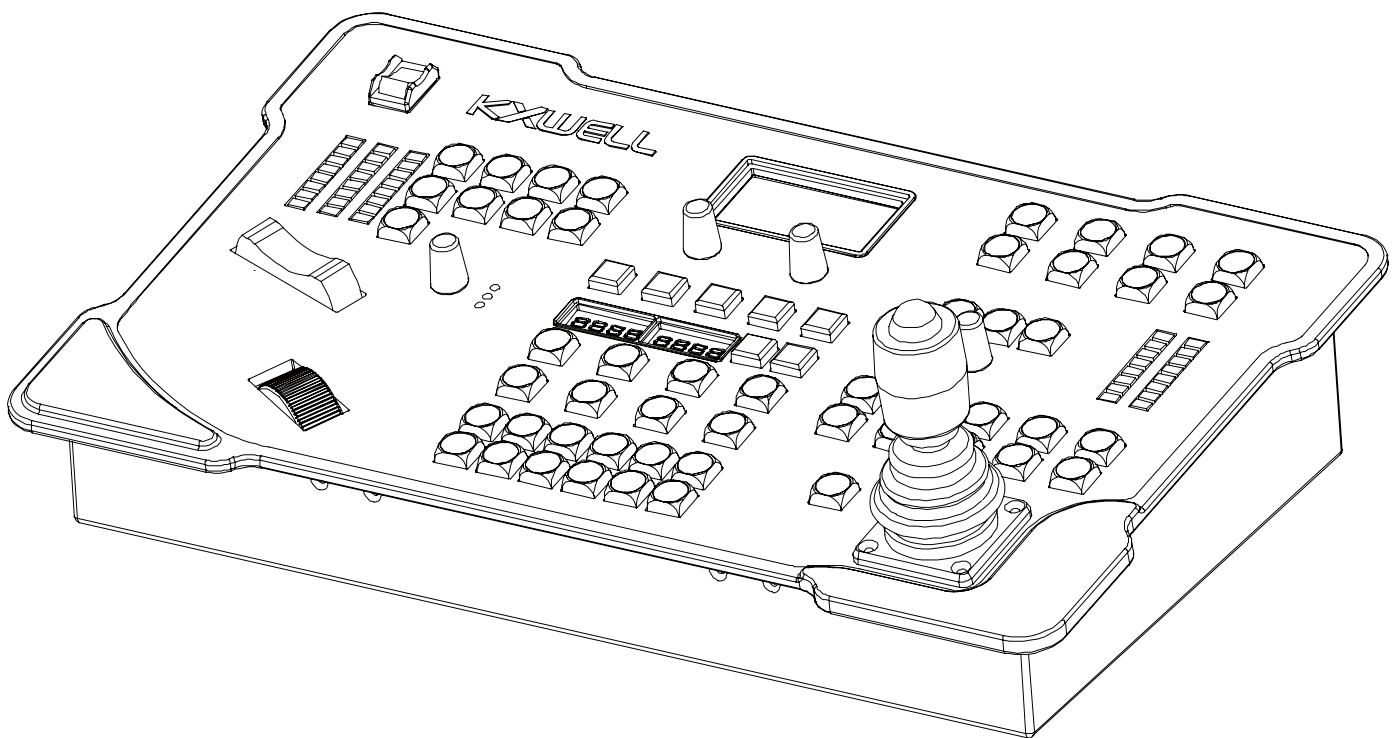




Operation Manual

Multi-Function Professional Robotic Controller

KT-RP8910



Version 201707 1.1

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FOREWORD:

Thank you for choosing KXWELL products.

This manual will guide you through the features, control operations, camera parameter setup, system connection and operations under different circumstances, abnormal operating states and technical parameters of mention controller.



Please read this operation manual before set-up and operate the robotic system. KXWELL will not responsible for any misuse and miss-operate of KXWLL products.

WARNING!

- This product must be used within the specified instruction and connection in order to avoid damage to the product or any other product connected / attached on it,
- DO NOT open the housing of the product to prevent electric shock, only qualified technicians are allowed to service and repair of the product;
- Use the product within the specification. Prevent overheating, over voltage, over loading and within humidity to ensure maximum lifetime and stable operation.
- This product is not weatherproof product; keep away from rain and damper.
- Before clean the controller panel, ensure that the product is powered off (without power plug in), and use a soft brush, dry soft cloth to wipe the surface. Use a neutral detergent like LCD / computer cleaning liquid to gently wipe the surface for the tough dirt. DO NOT USE harsh or corrosive detergents that may corrode and damage of the controller. Ensure it's completely dry before power up to avoid damage of the product.

Safety Precautions

This section is to guide users to use this product correctly, thus to prevent danger or property damage. Please read this manual carefully before using the product and keep it properly for future reference.

	
WARNING: Alerts user of a potential hazard which, if not avoided, could result in serious injury or death	CAUTION: Alerts user of a potential hazard which, if not avoided, could result in injury or property damage



WARNING:

- In order to prevent the risk of electric shock, DO NOT attempt to open the panel cover since there is no user-serviceable part inside it. For maintenance, please contact qualified maintenance personnel;
- In order to prevent fire and electric shock, this device should be kept away from any environment where any liquid is used, and can be stored only in an environment without the risk of liquid drop or splash; besides, never place any liquid container on the top of the device;
- Applicable national and local regulations in relation to electrical safety must be observed during installation and use of the product;
- Please use a power adapter supporting this product (KT-RP8910) ; DC12V/3000mA power supply should be used;
- Disconnect the AC if the product left unused for a long period of time.



CAUTION:

- DO NOT install or place the device in a bookcase, closet or other confined space, in order to prevent electric shock or fire as a result of overheating, please ensure good ventilation for the install location.
- Handle with care; drop may cause damage of the product. Do not install the product on vibration surface; keep away from magnetic field interference to avoid damage of the product and shorten the life time of the product.
- Install and use the product within temperature ($> +45^{\circ}\text{C}$) to ($< -10^{\circ}\text{C}$) and maximum humidity of (85%).
- Avoid direct sunlight on the device while operation or poor ventilation, or near any heat sources such as heater and central heating. (This may cause malfunction or over heat damage and catch fire of the product.)

CONTENTS

1. PRODUCT FEATURES	- 4 -
2. INSTALLATION INSTRUCTIONS.....	- 5 -
2.1 Power On	- 6 -
2.2 Connect Pan/tilt heads and Cameras	- 7 -
3. SYSTEM CONNECTION DIAGRAM	- 8 -
3.1 RS422 Connection Mode	- 8 -
3.2 TCP/IP Connection Mode	- 9 -
4. FUNCTIONS AND OPERATIONS OF KEYS.....	- 10 -
4.1 OPERATE Switch	- 12 -
4.2 CAMERA AND PAN-TILT SEL Selection Area	- 12 -
4.3 Trace/Preset selection area	- 12 -
4.4 Trace Control Area.....	- 12 -
4.5 Trace and Preset Position Information Area	- 13 -
4.6 Multi-camera Operation Push-down	- 13 -
4.7 Auxiliary Function Control Keys	- 14 -
4.8 PAN/TILT/ZOOM Fine-tuning.....	- 14 -
4.9 F1 and F2 knob	- 15 -
4.10 IRIS Control Area	- 15 -
4.11 Z/F Control Area	- 16 -
4.12 4D Joystick.....	- 16 -
4.13 PAN/TILT/ZOOM/FOCUS/IRIS Position indicators	- 16 -
4.14 Rocker Potentiometer	- 17 -
4.15 Focus Wheel Control.....	- 17 -
4.16 Parameter Setting Keys	- 17 -

4.17 Initial Interface	- 20 -
4.18 Camera Setup Menu	- 21 -
4.19 Pan/tilt head Setup Menu	- 22 -
4.20 Controller setup menu	- 23 -
4.21 Network parameter setup	- 24 -
4.22 GPI Set.....	- 30-
5. CONTROLLER OPERATION GUIDANCE.....	- 32 -
5.1 Power On/Off27.....	- 32 -
5.2CameraSelection.....	- 272 -
5.3 Pan/Tilt Head Operations.....	- 27 -
5.3.1 Movement Control of Pan/Tilt Head.....	- 27 -
5.3.2 Fine tuning of Pan/Tilt Head and Camera	- 28 -
5.3.3 Control Direction Setup of Pan/Tilt Head	- 28 -
5.3.4 Limit/Release Pan/Tilt Head Position	- 30 -
5.4 Setting Preset Position	31 -
5.4.1 Storing Preset Position	- 31 -
5.4.2 Calling Preset Position	- 34 -
5.5 Trace Operations	- 35 -
5.5.1 Trace Creation.....	- 36 -
5.5.2 Trace Preview.....	- 36 -
5.5.3 Trace Storage.....	- 37 -
5.5.4 Trace Calling	- 37 -
5.6 Camera Menu Operations	- 38 -
5.7 Camera and Lens Setup.....	- 39 -
5.7.1 Setup of Lens Operation Direction	- 39 -
5.7.2 Lock of Focus/Zoom with Joystick.....	- 40 -

5.7.3 Camera Setup.....	- 40 -
5.8 Communication Method Selection and Network Parameter Setup	- 41 -
5.8.1 Communication Method Selection.....	- 42 -
5.8.2 Network Parameter Setup	- 43 -
5.9 Operations in Exceptional Cases.....	- 45 -
6. ABNORMAL WORKING MODE	- 46 -
LINK ERR	- 46 -
7. BACK PANEL INTERFACE.....	- 46 -
7.1 Power Interface	- 47 -
7.2 TCP/IP Control Interface	- 47 -
7.3 RS422 Control Interface	- 47 -
7.4 Auxiliary Interface.....	- 48 -
7.5 Video Output Linkage Interface	- 48 -
7.6 External Control Signal Output Interface	- 48 -
7.7 External Control Signal Input Interface	- 50 -
7.8 Track Elevating Interface	- 52 -
7.9 REMOTE2 Interface	- 52 -
8. TECHNICAL SPECIFICATIONS	- 53 -
9. DIMENSIONS	- 54 -
10. TROUBLESHOOT	- 55 -

1. Product Features

- Control up to 10 channels of broadcast Robotic head heads and broadcast cameras.
- Support KXWELL protocol.
- Support RS422 and TCP/IP remote interface control.
- Support remote startup/shutdown.
- Support remote position limitation of pan/tilt head.
- Store and call up to 1,000 preset positions.
- Support Kxwell's Fade and Tracing Preset Memory.
- Real-time LED indication of robotic head and lens position.
- Support cascade control for track elevating system.
- Support 10-channel GPI and 10-channel GPO.
- Support remote adjustment for camera parameters and one-button adjustment for general parameters
- Allow you to start/stop recording remotely (Only for handheld camcorder).
- Auto identification of KXWELL robotic head and camera connected.
- Maximum control distance: 1.2km (RS422).

2. Installation Instructions

To use the controller, fulfill the following steps:

- Read this Manual carefully to learn the function operations of the controller;
- Follow the system connection diagram to do wiring and connections;
- Power on the devices in the system;

- Slide the OPERATE switch  to position "ON";


- Adjust the allocation of each camera on the controller based on their communication mode and control protocol;

Note:

- ◆ Check if each device uses the correct power supply.
- ◆ Check if the cables are connected properly.
- ◆ Check if each camera is compatible with the system communication mode.
- ◆ Check if each camera is compatible with the system control protocol.

2.1 Power On

Prior to formal operation of the controller, please perform the following operations first:

- Connect one end of the power adapter to the  interface of the controller and the other end to the AC power socket.

- Slide the OPERATE switch  to “ON” position.

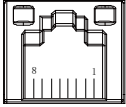
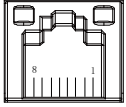
The controller is powered on now.

Note:

- ◆ Please ensure that the controller is supplied with proper voltage; it is suggested that the standard power adapter supplied by KXWELL should be used to supply voltage.

2.2 Connecting Pan/tilt Head and Camera

Operation steps:

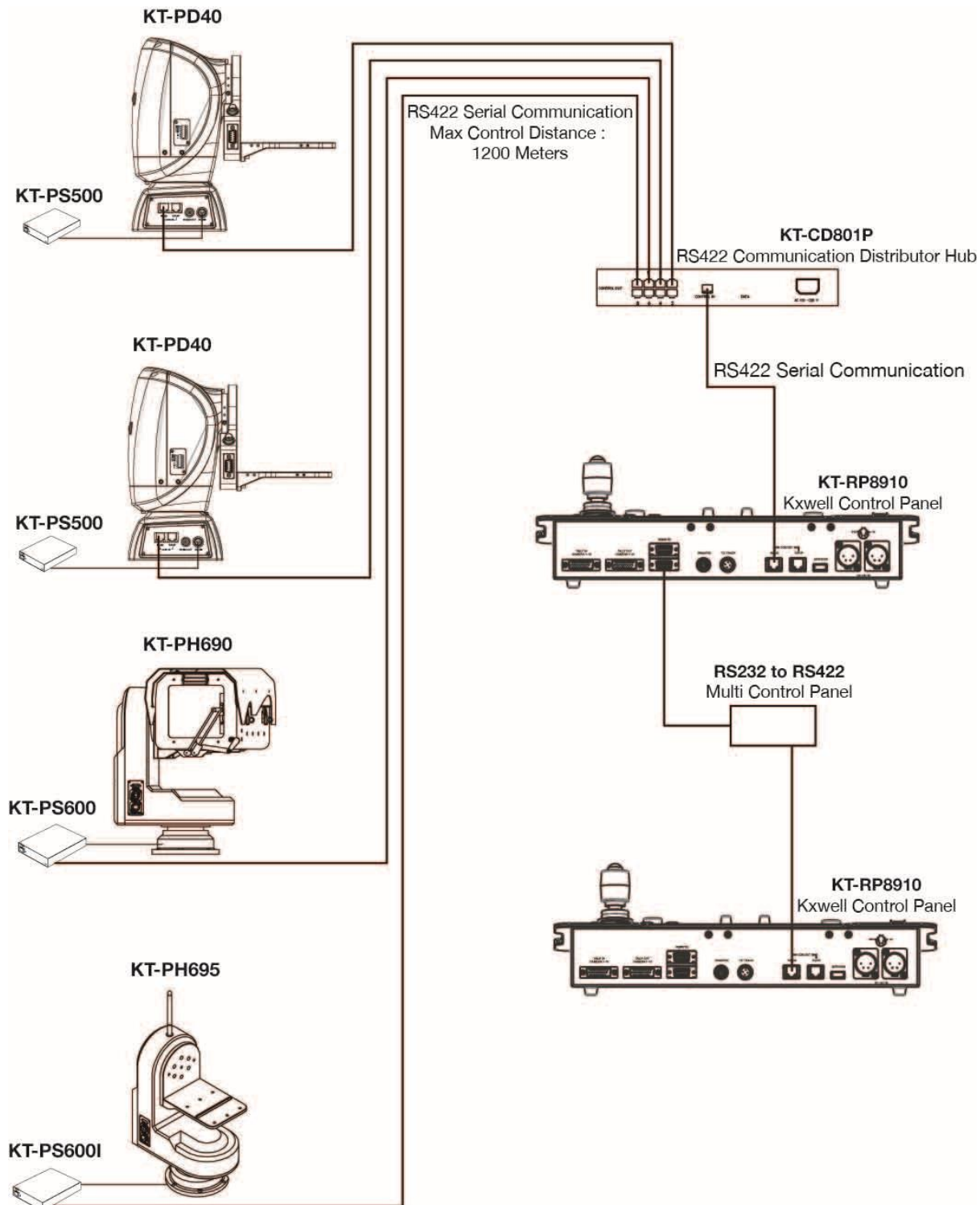
- Identify the connection mode of the robotic head: if the link mode is RS422, connect it to the  port of the controller; if the link mode is TCP/IP, connect it to the  port of the controller.
- Select a robotic head and configure the connection mode of the controller.
- Switch back to such robotic head and view the message displayed in the row “NOTE” on the display.
Under RS422 mode, such message shall be “NORMAL-422”. Under TCP/IP mode, such message shall be “NORMAL-TCP”.

Note:

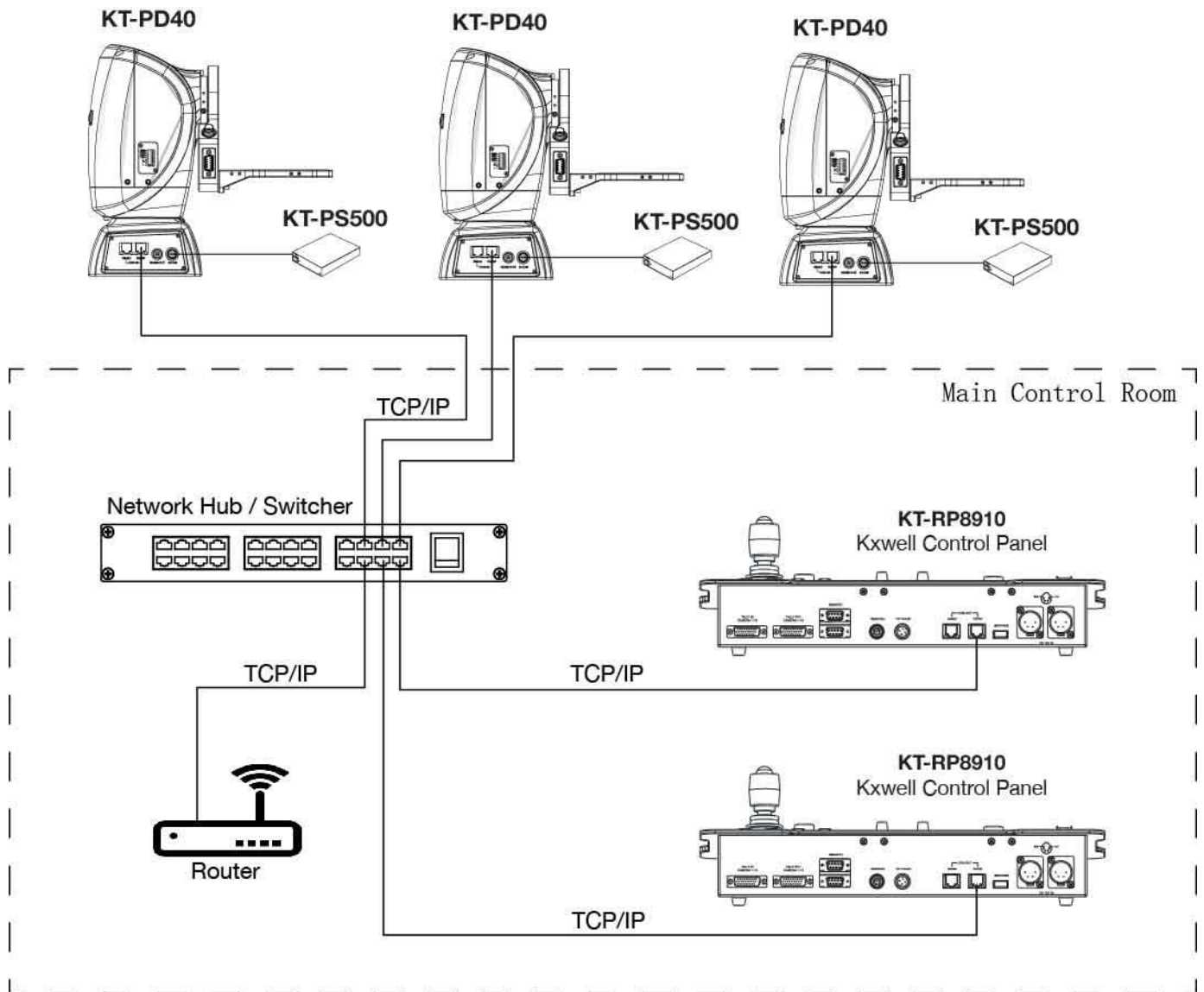
- ◆ The controller is powered on.
- ◆ The pan/tilt head and camera is configured properly and powered on.
- ◆ The cameras is correctly connected and powered on.
- ◆ The controller is connected to the pan/tilt head properly.
- ◆ The controller uses the same communication mode and protocol as the pan/tilt head.

3. System Connection Diagram

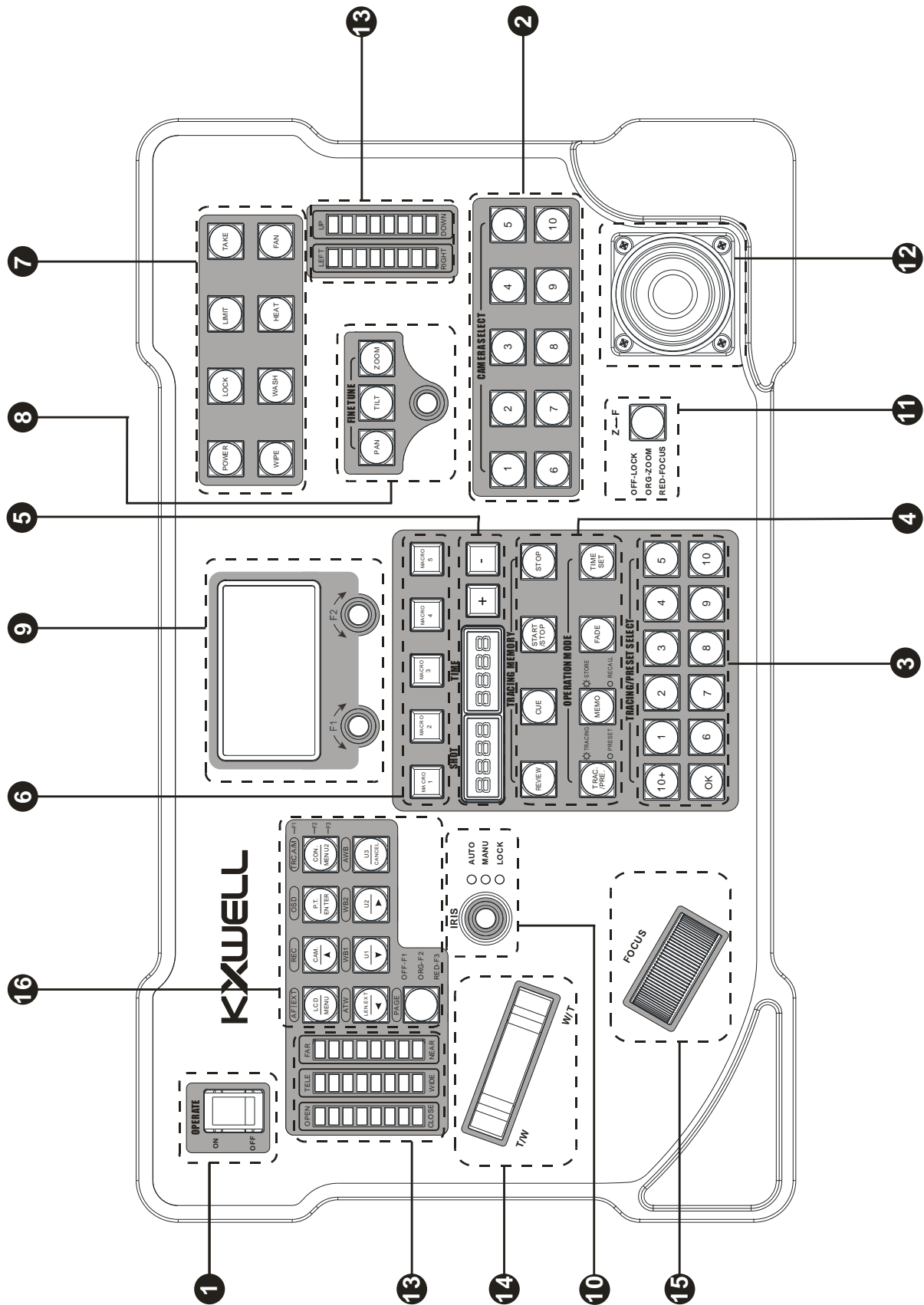
3.1 RS422 Connection Mode



3.2 TCP/IP Connection Mode



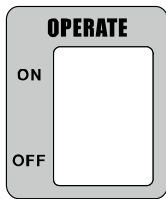
4. Functions and Operations of Keys



Control Panel

1	OPERATE switch
2	CAMERA AND PAN-TILT SEL selection area
3	Trace/preset selection area
4	Tracing control area
5	Trace/preset position information area
6	Multi-camera operation push-down
7	Auxiliary function control keys
8	PAN/TILT/ZOOM fine-tuning
9	F1 and F2 knob
10	IRIS control area
11	Z/F control area
12	4D joystick
13	PAN/TILT/ZOOM/FOCUS/IRIS position indicators
14	Zoom Rocker potentiometer
15	Focus wheel control
16	Parameter setting keys

4.1 OPERATE Switch

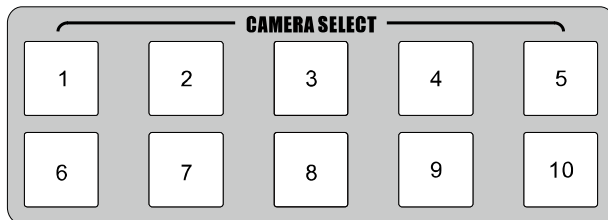


Turn on/off the controller.

CAUTION

When this switch is turned to OFF position, the controller is not actually disconnected from power supply but enters standby mode.

4.2 CAMERA AND PAN-TILT SEL Selection Area

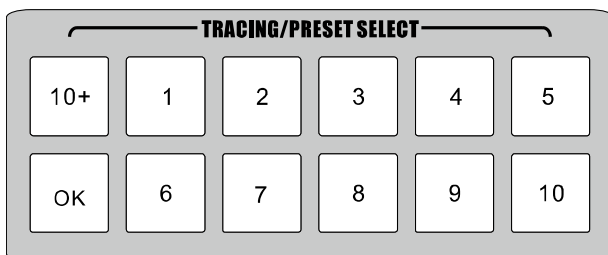


Select the pan/tilt heads and cameras to be controlled.

Press [1] ~ [10] to select the camera1#~10#.

On the display, the CAM area indicates the numbers of the cameras connected. The camera number selected last time is displayed on the NUM area.

4.3 Trace/Preset Selection Area



Save and recall Fade / Tracing and Preset memory.

Press [10+] key to switch among the preset positions [1]~[10] or [11]~[20] or the user-defined preset positions.

In preset mode:

When the [10+] indicator goes off, the effective preset position number range is [1]~[10];

When the [10+] indicator remains blue, the effective preset position number range is [11]~[20];

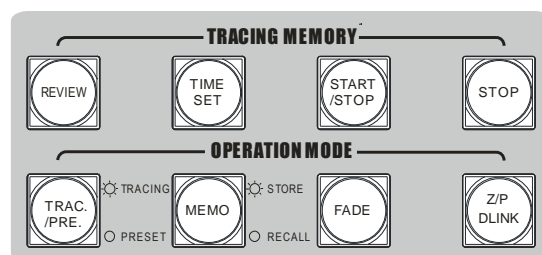
When the [10+] indicator remains red (press and hold [10+] for 3s), the effective preset position number range is [0000]~[1000];

In user-defined tracing mode:

When the [10+] indicator remains off, the effective trace number range is [1]~[10]; Press [MEMO] key ([MEMO] indicator lights up in green), and then press [1]~[10] to save the current trace or preset position. Press [MEMO] again to turn off the [MEMO] indicator. Then you can recall traces or preset positions.

Note: to call a trace, lead the pan/tilt head and lens back to the start of such trace, during which process, the indicator of such trace number key will flash; at the end of such process, such indicator will go off

4.4 Trace Control Area



These keys are designed for trace control:

[REVIEW]: in user-defined tracing mode, press it to

preview the recent trace.

[TIME SET]: in FADE preset mode, press it to prepare the keys in preset selection area for preset position time entry (refer to Section 5.4).

[START/STOP]: start/stop the tracing or preset position operation. Press [START/STOP] (the [START/STOP] indicator will flash) in user-defined tracing mode or FADE preset mode. The digital counter in TIME area will start counting down the tracing operation (for tracing operation only). Now you can define the movement tracing of the pan/tilt head and lens or the start of the FADE preset position. When the tracing operation is completed, press [START/STOP] again (the [START/STOP] indicator will go off) to stop the tracing or go to the end of the FADE preset position.

[STOP]: stop the running tracing. When calling/previewing traces, press [STOP] to stop the running tracing.

[TRAC./PRE.]: switch between the preset mode and user-defined tracing mode. When the [TRAC./PRE.] indicator remains green, you can perform tracing operations to the pan/tilt head and camera. When the indicator goes off, you can perform preset position operations to the pan/tilt head and camera.

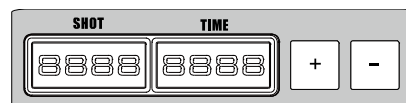
[MEMO]: save or call traces or preset positions. When the [MEMO] indicator remains green, press the keys in tracing and preset selection area to save traces or

preset positions. When the [MEMO] indicator goes off, press the keys in tracing and preset selection area to call traces or preset positions.

[FADE]: switch to FADE preset mode. When the [FADE] indicator remains green, the FADE preset mode (with time function) is enabled. When the indicator goes off, the normal preset mode is enabled.

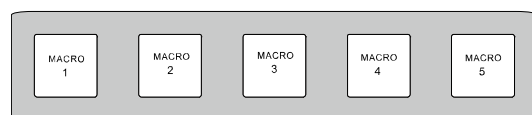
[Z/P DLINK]: When the [Z/P DLINK] indicator remains on, the pan/tilt head running speed is linked to zooming. When the indicator goes off, the pan/tilt head running speed is not linked to zooming.

4.5 Trace and Preset Position Information Area



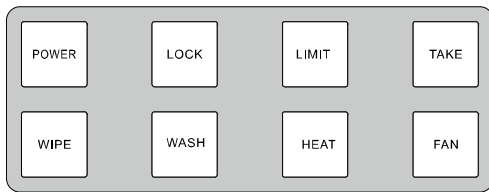
This area indicates the tracing status. The SHOT section indicates the trace numbers or preset position numbers. The TIME section indicates the storage time or execution time of traces.

4.6 Multi-camera Operation Push-down



This area allows push-down operations for multiple cameras. This function is not available yet.

4.7 Auxiliary Function Control Keys



These keys are designed to control auxiliary devices.

[POWER]: power on/off the camera. In power-on state, press and hold [POWER] for 2s to power off the camera. To power on back the particular camera, on the camera select, select the particular camera to switch on the camera. The camera is now switched back on.

[LOCK]: lock the keyboard of the controller. Press and hold [LOCK] for 2s to lock the keyboard with the [LOCK] indicator on. The [LOCK] indicator will go off when the keyboard is unlocked.

[LIMIT]: set the pan/tilt head position limit (refer to Section 5.3.4).

[TAKE]: reserve.

[WIPE]: control the wiper. The [WIPE] indicator will remain on when the wiper is turned on, and go off when the wiper is turned off.

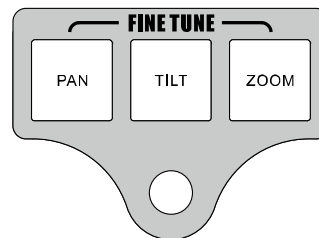
[WASH]: control the sprinkler. The [WASH] indicator will remain on when the sprinkler is turned on, and go off when the sprinkler is turned off.

[HEAT]: control the heater. The [HEAT] indicator will remain on when the heater is turned on, and go off

when the heater is turned off.

[FAN]: control the fan. The [FAN] indicator will remain on when the fan is turned on, and go off when the fan is turned off.

4.8 PAN/TILT/ZOOM Fine-Tuning



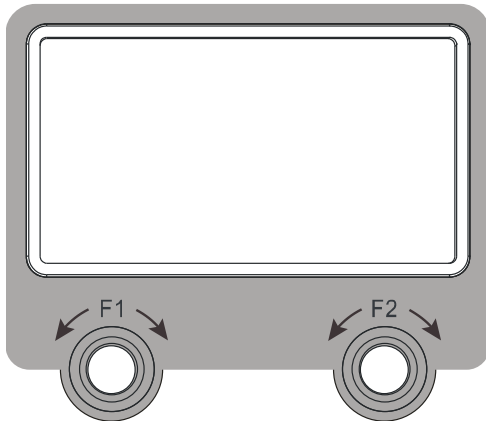
These keys and knob are designed to fine-tune the pan position or tilt position of the pan/tilt head or the zoom position of the camera. Only one Key: [PAN], [TILT] and [ZOOM] can be selected at a time.

[PAN]: fine-tune the pan position of the pan/tilt head. When the [PAN] indicator remains green, turn the knob to fine-tune the pan position of the pan/tilt head.

[TILT]: fine-tune the tilt position of the pan/tilt head. When the [TILT] indicator indicates green, turn the knob to fine-tune the tilt position of the pan/tilt head.

[ZOOM]: fine-tune the zoom position of the camera. When the [ZOOM] indicator indicates green, turn the knob to fine-tune the zoom position of the camera.

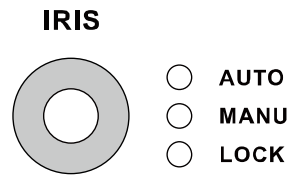
4.9 F1 and F2 knob



F1 knob: in the initial interface (on the display panel), use this knob to change the **SPD1** (rocker potentiometer sensitivity) value at the lower left corner; in the menu parameter setup interface, use this knob to select the item to be set.

F2 knob: in the initial interface (on the display), use this knob to change the **SPD2** (joystick sensitivity) value at the lower right corner; in the menu parameter setup interface, use this knob to change the value of the selected item.

4.10 IRIS Control Area



Change the working mode of the IRIS.

Press the **IRIS** knob to toggle among the AUTO mode, MANU mode and LOCK mode.

In AUTO mode (automatic mode), the IRIS is controlled by the camera.

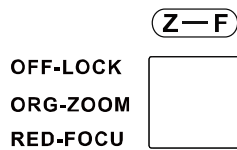
In MANU mode (manual mode), the IRIS is controlled through the **IRIS** knob of the controller. Turn the **IRIS** knob clockwise/counterclockwise to increase/reduce the IRIS value.

In LOCK mode, the IRIS is locked at a specific value, uncontrollable by the controller or camera.

The **IRIS** knob can help you control the IRIS value only in MANU mode. Turn the **IRIS** knob clockwise/counterclockwise to increase/reduce the IRIS value.

Note: if the actual results achieved by the **IRIS** knob operations are contrary to the above results, check the item “I.DIR” in Controller setup menu(refer to Section 5.6).

4.11 Z/F Control Area



Change and display the working mode of the dial at the upper part of the 4D joystick.

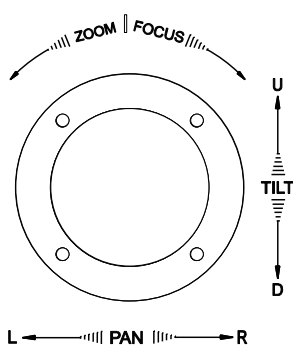
Press [Z/F] until the [Z/F] indicator lights up in red. The dial at the upper part of the joystick will work in FOCUS mode.

Press [Z/F] until the [Z/F] indicator lights up in orange. The dial at the upper part of the joystick will work in ZOOM mode.

Press both [Z/F] and key at the joystick top. [Z/F] indicator goes off. The dial at the upper part of the joystick will be locked, not respond to any operation.

Note: to lock/unlock the dial, press both [Z/F] and the key at the joystick top.

4.12 4D Joystick



Push the 4D joystick up, down, left or right to control the pan position or tilt position of the pan/tilt

head. The movement range of the joystick will influence the control rate (a larger/smaller movement range will lead to a higher/lower control rate). Control the joystick sensitivity by changing the SPD2 value in the initial interface.

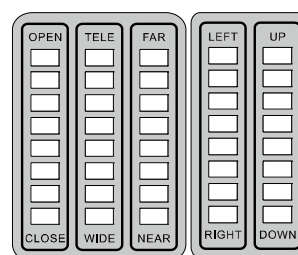
Turn the dial at the upper part of the 4D joystick to control the focusing/zooming of the camera lens. A larger displacement of the dial from the reference position will lead to a higher focusing/zooming rate. Turn the dial clockwise to control the FAR value (focus) or TELE value (zoom). Turn the dial counterclockwise to control the NEAR value (focus) or WIDE value (zoom).

Use [Z/F] or the key at the joystick top to switch the working mode of the dial among FOCUS, ZOOM or LOCK mode.

Note: if the actual results achieved by the 4D joystick operations are contrary to the above results, check the item [P.DIR], [T.DIR], [F.DIR] or [Z.DIR] in Controller setup menu (refer to Section 5.6).

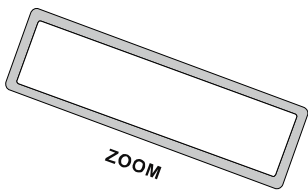
4.13 PAN/TILT/ZOOM/FOCUS/IRIS Position

indicators



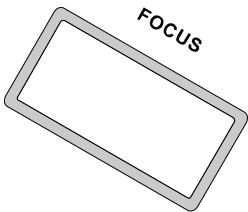
These indicators indicate the pan and tilt position of the pan/tilt head and the focus, zoom and IRIS position of the camera.

4.14 Rocker Potentiometer



Use the rocker potentiometer to control the lens to zoom in the wide-angle direction or close-up direction.

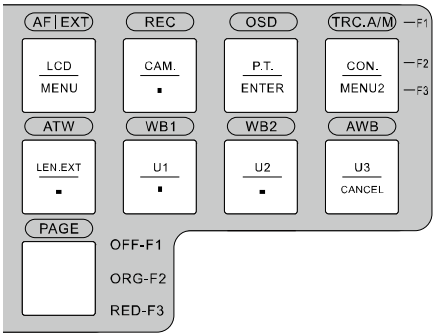
4.15 Focus Wheel Control



Rub the focus wheel to control the lens to focus near or far.

*Note: Depends on the model of the camera.
Lens focus parameters are required to function normally.

4.16 Parameter Setting Keys



These keys help you set the parameters of the camera, pan/tilt head or controller or adjust their state.

These keys support three modes (press [PAGE] to change their mode). When the [PAGE] indicator is off, these keys work in F1 mode. When the [PAGE] indicator remains orange, these keys work in F2 mode. When the [PAGE] indicator remains red, these keys work in F3 mode.

The functions of each key in different modes are described below:

In F1 Mode

Key	Functions
AF/EXT	Switch between Focus - Auto mode and Focus - Manual mode (not for EX camera)
REC	Start/stop recording (handheld camcorder) or enable the White Balance - Auto mode (multi-purpose 3CCD box camera)
TRC.A/M	When the relevant device is connected, switch between Auto Track - Auto mode and Auto Track - Manual mode
OSD	Display the camera menu characters
ATW	Switch to White Balance - Auto mode
WB1	White Balance - mode 1
WB2	White Balance - mode 2
AWB	Calibrate the white balance

Note: the controller will auto adapt the functions of the keys to the camera type.

In F2 Mode

Key	Functions
LCD	The [LCD] indicator remains on in F2 mode.
CAM.	Press [CAM.] key to display the Camera setup menu, and then press down F1 knob to select an item and press down F2 knob to adjust the value of such item (not for handheld camcorder).
P.T.	Press [P.T.] key to display the Pan/tilt head setup menu, and then turn F1 knob to select an item and turn F2 knob to adjust the value of such item.
CON.	Press [CON.] key to display the Controller setup menu, and then turn F1 knob to select an item and turn F2 knob to adjust the value of such item. The Controller setup menu may contain different items under different protocols.
U1	User-define key 1
U2	User-define key 2
U3	User-define key 3

In F3 Mode

Key	Functions
MENU	Same as the [MENU] key on the camera (for multi-purpose 3CCD box cameras, some Sony handheld camcorders and some Canon handheld camcorders only)
↑	In the camera menu, move the camera cursor up
↓	In the camera menu, move the menu cursor down
←	In the camera menu, move the menu cursor left
→	In the camera menu, move the menu cursor right
ENTER	[Enter] key for the camera menu

4.17 Initial Interface

Initial interface under KXWELL protocol:

KXWELL	X-X.YY
CAM:001	NUM:002
NOTE:NORMAL-422	
SPD1:05	SPD2:10

Explanations:

KXWELL	X-X. YY(camera model connected)		
CAM:001 (current camera number)	NUM:002 (camera number selected last time)		
NOTE:NORMAL-422 (current joystick state or pan/tilt head connection state)			
SPD1:05 (rocker potentiometer sensitivity)	SPD2:10 (joystick displacement sensitivity)		

Use F1 and F2 knob to adjust SPD1 and SPD2.

Note: in the above initial interface example, the controller is connected to the pan/tilt head **X-X** and camera series **YY**.

4.18 Camera Setup Menu

With [PAGE] indicator in orange (in F2 mode), press [CAM.] key to go to the Camera setup menu displaying the parameter items and values on multiple pages. Turn F1 knob to select an item and turn F2 knob to select a value for it.

CAM.MENU 1/3
→WB MODE: AUTO
SHUTTER: OFF
ND:CLR

Item	Optional Values	Function
WB MODE	AWC, VAR, 3200, 5600 or 7500	Set the white balance mode of the camera
SHUTTER	OFF, 50HZ, 60HZ, 1/200, 1/500 or 1/1000	Adjust the camera shutter
ND	CLR, ND1, ND2 or ND3	Set the ND filter mode
GAIN SET	-6db~12db	Adjust the gain (available in MANU gain mode only)
R.GAIN	-127~+127	Adjust the red gain
B.GAIN	-127~+127	Adjust the blue gain
M.BLACK	-127~+127	Adjust the master black level of the camera
VD/BAR	VD or BAR	Output switch between video and color bar
DTL	-127~+127	Adjust the detail level of the camera
FILE	PRESET, 1, 2, 3 or 4	Select the camera file
SAVE	PRESET, 1!, 2!, 3! or 4!	Save the camera file

Note:

1. Turn F1 knob to select an item and turn F2 knob to select a value for it.
2. The “!” in the above table indicates the operations requiring caution. To execute such items, press down F2 knob to confirm.
3. Different parameters may be displayed for different cameras.

4.19 Pan/tilt Head Setup Menu

With [PAGE] indicator in orange (in F2 mode), press [P.T.] key to go to the Pan/tilt head setup displaying the parameter items and values (in the same sequence as listed in the following table) on multiple pages. Turn F1 knob to select an item and turn F2 knob to select a value for it.

PAN. MENU 1/2
→PP.DIR: NORMAL
PT.DIR: NOMAL
LINK MODE: RS422

Item	Optional Values	Function
PP.DIR	NORMAL, REVERSE	Set the pan direction of the pan/tilt head
PT.DIR	NORMAL, REVERSE	Set the tilt direction of the pan/tilt head
SAVE	“NO!”, “YES!”	Save the current setup

Note:

1. Turn F1 knob to select an item and turn F2 knob to select a value for it.

2. The “!” in the above table indicates the operations requiring caution. To execute such items, press down F2 knob to confirm.

4.20 Controller Setup Menu

With [PAGE] indicator in orange (in F2 mode), press [CON.] key to go to the Controller setup menu displaying the parameter items and values (in the same sequence as listed in the following table) on multiple pages. Turn F1 knob to select an item and turn F2 knob to select a value for it.

CON. MENU 1/3
→P.DIR: NORMAL
T.DIR: NORMAL
Z.DIR: NORMAL

Item	Optional Values	Function
P.DIR	NORMAL, REVERSE	Set the pan direction of the joystick
T.DIR	NORMAL, REVERSE	Set the tilt direction of the joystick
Z.DIR	NORMAL, REVERSE	Set the zoom direction of the controller
B.DIR	NORMAL, REVERSE	Set the zoom direction of the rocker potentiometer
F.DIR	NORMAL, REVERSE	Set the focus direction of the

		controller
I.DIR	NORMAL, REVERSE	Set the IRIS direction of the controller
LIMIT	P.T., D.E.	Select the position limitation function
ELE.S	1~10	Set the elevator speed
DOL.S	1~10	Set the trolley speed
LINK MODE	TCP, RS422	System control connection mode
GPI SET	Enable / Disable	Enable or Disable Link to Switcher
SAVE	"NO!", "YES!"	Save the parameter values

Note:

1. Turn F1 knob to select an item and turn F2 knob to select a value for it.
2. Changes of [P.DIR] [P.DIR], [T.DIR], [Z.DIR], [F.DIR] and [I.DIR] will take effect immediately, while changes of [LINK MODE] and [PROTOCOL] will take effect only after [SAVE] was executed,

4.21 Network Parameter Setup

- (1) Go to the Controller setup menu;
- (2) Turn F1 knob to select **LINK MODE** and turn F2 knob to select **TCP** control mode;
- (3) Press F2 knob to go to the Network parameter setup menu.

The Network parameter setup menu displays the parameter items and values (in the same sequence as listed in the following table) on multiple pages.

NET. MENU 1/4
→LOCAL IP:
193.168.000.2
SUB-MASK
255.255.255.000

Item	Optional Values	Function
LOCAL IP	0.0.0.0-254.254.254.254	Set the IP of the controller
SUB-MASK	0.0.0.0-254.254.254.254	Set the subnet mask
GATEWAY	0.0.0.0-254.254.254.254	Set the default gateway
REM.PORT	0-65535	Set the target port number
REMOTE IP	0.0.0.0-254.254.254.254	Set the IP of the pan/tilt head
SAVE	YES! or NO!	Save the parameter values

Note:

1. Turn F1 knob to select an item and turn F2 knob to select a value for it;
2. Remember to save the network parameter setup;
3. To save the parameter setup, select “YES!” and press down F2 knob.

4.22 GPI IN setup

- (1) Go to the Controller setup menu;
- (2) Turn F1 knob to select **GPI SET** and turn F2 knob to select Enable control mode;
- (3) Press F2 knob to go to the GPI Setting setup menu.

The GPI setup menu displays the parameter items and values (in the same sequence as listed in the following table) on multiple pages.

Item	Optional Values
GPI 1	No Assign or [1]~[10] PST/PGM
GPI 2	No Assign or [1]~[10] PST/PGM
GPI 3	No Assign or [1]~[10] PST/PGM
GPI 4	No Assign or [1]~[10] PST/PGM
GPI 5	No Assign or [1]~[10] PST/PGM
GPI 6	No Assign or [1]~[10] PST/PGM
GPI 7	No Assign or [1]~[10] PST/PGM
GPI 8	No Assign or [1]~[10] PST/PGM
GPI 9	No Assign or [1]~[10] PST/PGM
GPI 10	No Assign or [1]~[10] PST/PGM

Note*

- When GPI is set as PST Mode, Tally will light up Green color.
- When GPI is set as PGM Mode, Tally will light up Red color.
- When GPI has been assign but not active, Tally will light up Orange color
- For GPI pin configuration. Refer to Page 50

5. Controller Operation Guidance

5.1 Power On/Off

1. Connect the controller to 12V DC power supply through either of the DC12VIN power ports;
2. Turn the switch to “ON”. The controller starts power-on polling to each camera. 10 indicators on camera selection keys light up and go off by turns and “KXWELL” is shown on the interface. Then initial interface appears after the startup is finished.
3. Turn the switch to “OFF”. If the controller is in ON state, it starts power-off polling to each camera and 10 indicators on camera selection keys light up and go off by turn. After shutdown, all the indicators and other displays go off respectively.

5.2 Camera Selection

1. Connect the whole system, power up the controller by flipping the switch to “ON”;
2. Make sure all pan/tilt heads and cameras are connected and powered on properly;
3. Select a front-end camera number on the camera selection area. The key

indicator for the selected camera will light up. Now you can control the front-end camera.

Note: if the selected camera cannot be controlled and the corresponding key indicator flashes 6 seconds after selection, it means that the controller isn't connected correctly to the front-end pan/tilt head. In this case, check the system connection and power supply.

5.3 Pan/Tilt Head Operations

5.3.1 Movement Control of Pan/Tilt

Head

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;
2. Control the pan and tilt position of the pan/tilt head through toggling the joystick to the left/right/up/down;
3. On the main interface, turn F2 knob to adjust the joystick sensitivity (SPD2) ranging from 1 to 10. The higher it is, the faster the pan/tilt head moves

Note: the speed of the pan/tilt head is related to the ZOOM value. The bigger ZOOM, the lower speed.

5.3.2 Fine Tuning of Pan/Tilt Head and Camera

Use the fine tuning knob to fine-tune the pan/tilt head and camera.

1. Select the fine-tuning direction (pan or tilt) on the control panel; press [PAN]



to fine-tune the pan position of the pan/tilt head; press [TILT]



to fine-tune the tilt position of the pan/tilt head, and press [ZOOM]



to fine-tune the zoom position.

After the key is pressed, its indicator remains green.

2. Turn the knob on this area to fine-tune the pan and tilt position of the pan/tilt head and the zoom position of the camera.


Note: the fine tuning direction is related to the control direction setup.


5.3.3 Control Direction Setup of Pan/Tilt Head

Set the control direction of the pan/tilt head on the controller by the following two methods:

◆ On pan/tilt head menu

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;

2. Press the mode switch key  to switch to F2 mode. The [PAGE] indicator remains Orange;

3. Press pan/tilt head menu key  to enter the pan/tilt head menu as follow:

PAN. MENU 1/1
→PP.DIR: NORMAL
PT.DIR: NORMAL
SAVE: NO!

4. Turn F1 knob to select the item to be set^{*1}, and turn F2 knob to select the parameter value and save settings^{*2}.

Related items and parameters:


- PP.DIR: settings for pan direction of the pan/tilt head (options: NORMAL, REVERSE);
- PT.DIR: settings for tilt direction of the pan/tilt head (options: NORMAL, REVERSE);
- SAVE: to save the pan/tilt head settings or not (options: NO, YES). You can save the settings by pressing down the F2 knob only when YES is selected here.


*1 turn F1 knob clockwise to scroll down and counterclockwise to scroll up.

*2 turn F2 knob clockwise to select REVERSE and counterclockwise to select NORMAL. Press down F2 knob to save the settings when the SAVE item is set to YES.

◆ On controller menu

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;

2. Press the mode switch key  to switch to F2 mode. The [PAGE] indicator remains Orange;

3. Press controller menu key  to enter the controller menu as follow:

CON. MENU 1/3
→P.DIR: NORMAL
T.DIR: NORMAL
Z.DIR: NORMAL

4. Turn F1 knob to select the item to be set^{*1}, and turn F2 knob to select the parameter value and save settings^{*2}.

Related items and parameters:

- P.DIR: settings for pan direction of the pan/tilt head (options: NORMAL, REVERSE);
- T.DIR: settings for tilt direction of the pan/tilt head (options: NORMAL, REVERSE);
- SAVE: to save the pan/tilt head settings or not (options: NO, YES). You can save the settings by pressing down the F2 knob only when YES is selected here.

*1 turn F1 knob clockwise to scroll down and counterclockwise to scroll up.


*2 turn F2 knob clockwise to select REVERSE and counterclockwise to select NORMAL. Press down F2 knob to save the settings when the SAVE item is set to YES.


5.3.4 Limit/Release Pan/Tilt Head

Position

You can limit the rotation range of the pan/tilt head from the controller as follow:

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;

2. Press the mode switch key  to switch to F2 mode. The [PAGE] indicator remains orange;

3. Press controller menu key  to enter the controller menu as follow:


CON. MENU 1/3
→P.DIR: NORMAL
T.DIR: NORMAL
Z.DIR: NORMAL

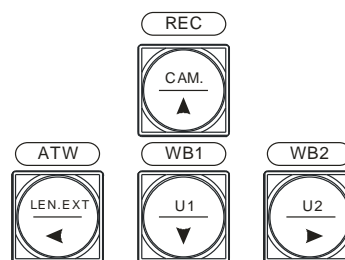
4. Turn F1 knob to select the item to be set^{*1}, and turn F2 knob to select the parameter value and save settings^{*2}. Set the LIMIT value to P.T. and save the settings;

Related items and parameters:

- LIMIT: select type of the position limit (options: P.T. (pan/tilt head), D.E. (elevating track system));

- SAVE: to save the pan/tilt head settings or not (options: NO, YES). You can save the settings by pressing down the F2 knob only when YES is selected here.

5. Press and hold LIMIT key  for 2 seconds. The LIMIT indicator flashes Orange;
6. The indicator stops flashing after 10 seconds, UP/DOWN/LEFT/RIGHT keys on the camera parameter setup area start flashing.



Press one of the four keys to limit/release the corresponding position of the pan/tilt head;

7. When the position limit or release is set, "LIMIT ON" or "LIMIT OFF" appears on the interface respectively.

KXWELL	A-H.DK
CAM :01	NUM :01
NOTE:LIMIT ON	
SPD1:05	SPD2:10

KXWELL	A-H.DK
CAM :01	NUM :01
NOTE:LIMIT OFF	
SPD1:05	SPD2:10

*1 turn F1 knob clockwise to scroll down and counterclockwise to scroll up.

*2 turn F2 knob clockwise to select the next option and counterclockwise to select the last option. Depress down F2 knob to save the settings when the SAVE item is set to YES.

5.4 Setting Preset Position

When the pan/tilt head turns to a direction that need intensive shooting, the controller sends a position preset command to the pan/tilt head. The system records the information about current position and the camera, and attaches them with the preset number. When the command is sent, the front-end devices (pan/tilt head and camera) will turn to the recorded status of this preset position to facilitate the shooting.

There are two preset modes: normal preset mode and time preset mode (FADE preset mode). Operations under the two

modes are specified as follows.

*Note: Tracking and Fade operations are currently available for KT-PD40 and KT-PD50 Pan/Tilt heads Only.


5.4.1 Storing Preset Position

A: normal preset mode

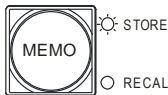
◆ Range of stored preset number: 1-20

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;


2. Press the tracing/preset mode switch


key  to switch to preset mode, and indicator on this key goes off;

3. Press the store/recall mode switch

key  to switch to storage mode, where indicator on this key lights up in green;

4. Press preset mode switch key

 to switch to normal preset mode, where indicator on this key goes off;

- Press preset extension key  to select 1-10 or 11-20 for the preset number. When the [10+] indicator lights up in blue, the [1]-[10] keys on the preset selection area correspond to preset number 1-10, and when the [10+] indicator goes off, the [1]-[10] keys on the preset selection area correspond to preset number 11-20;




- Press one of the [1]-[10] keys on the preset selection area to appoint a number for the preset position to be stored, which is displayed on the 4-bit

digital display [SHOT] .




After pressing, its indicator goes off and other indicators remain blue.

◆ **Range of stored preset number: 21-100**

- Ensure the correct connections of the system and between the pan/tilt head and the controller;
- Press the tracing/preset mode switch

key   TRACING  PRESET to switch to preset mode, and indicator on this key goes off;

- Press the store/recall mode switch


key   STORE  RECALL to switch to

storage mode, where indicator on this key lights up in green. Under recall mode, this indicator remains off;

- Press preset mode switch key




to switch to normal preset mode, where indicator on this key goes off;

- Press and hold [10+] key  for 2 seconds till its indicator turns red to enter manual input mode. Press [1]-[10] keys on the preset selection area to input a number for a stored preset position, which is displayed on the 4-bit digital display [SHOT]



([10] key corresponds "0" under this mode);

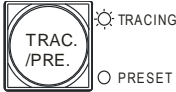
- After inputting, press OK key  to finish storing the preset position.

B: time preset mode (FADE preset Mode)


◆ **Range of stored preset number: 1-20**

- Ensure the correct connections of the system and between the pan/tilt head and the controller;


2. Press the tracing/preset mode switch


key  to switch to preset mode, and indicator on this key goes off;

3. Press preset mode switch key

 to switch to FADE preset mode, where indicator on this key lights up in green;



4. Turn the front-end devices to the start of the preset position and press the


preset start/stop key . After the start position is recorded, the indicator on this key starts flashing. Turn the front-end devices to the end of the preset position and press this key again. Then the end position is recorded and the indicator stops flashing.

5. Press time set key  and its indicator lights up, and you can use the [1]-[10] keys to input time.

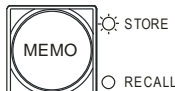
Note: after finishing the time setup, exit the time input mode, where indicator on this key goes off.

6. Press time adjustment key


  to adjust the preset time (time between the pan/tilt head turns from the start of the preset position to the end of it under the FADE preset mode), which is displayed on the digital display [TIME];

7. Press preset extension key  to select 1-10 or 11-20 for the preset number. When the [10+] indicator lights up in blue, the [1]-[10] keys on the preset selection area correspond to preset number 1-10, and when the [10+] indicator goes off, they correspond to preset number 11-20;

8. Press the store/recall mode switch

key  to switch to storage mode, where indicator on this key lights up in green. Under recall mode, this indicator remains off;

9. Press one of the [1]-[10] keys on the preset selection area to appoint a number for the preset position to be stored, which is displayed on the 4-bit

digital display [SHOT] . After pressing, its indicator goes off and other indicators remains blue.

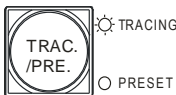
5.4.2 Calling Preset Position

A: normal preset mode


◆ Range of called preset number: 1-20


1. Ensure the correct connections of the system and between the pan/tilt head and the controller;

2. Press the tracing/preset mode

switch key  to switch to preset mode, and indicator on this key goes off;

3. Press the store/recall mode switch

key  to switch to calling mode, where indicator on this key lights up in green. Under recall mode, this indicator remains off;

4. Press preset extension key  to select 1-10 or 11-20 for the preset number. When the [10+] indicator lights up in blue, the [1]-[10] keys on the preset selection area correspond to preset number 1-10, and when the [10+] indicator goes off, they correspond to preset number 11-20;

5. Press one of the [1]-[10] keys on the preset selection area to call corresponding preset position. The

called preset number is displayed on the 4-bit digital display [SHOT]

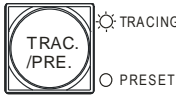


. After pressing, its indicator goes off and other indicators remains blue.


◆ Range of called preset number: 21-100


1. Ensure the correct connections of the system and between the pan/tilt head and the controller;


2. Press the tracing/preset mode switch


key  to switch to preset mode, and indicator on this key goes off;

3. Press the store/recall mode switch

key  to switch to calling mode, where indicator on this key lights up in green. Under recall mode, this indicator remains off;

4. Press and hold [10+] key  for 2 seconds till its indicator turns red to enter manual input mode. Press [1]-[10] keys on the preset selection area to input the number of the preset position to be called, which is displayed on the 4-bit digital display

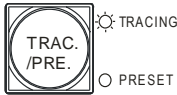
[SHOT]  ([10] key corresponds "0" under this mode);


5. Press OK key  to finish calling the preset position.


B: time preset mode (FADE preset mode)


◆ Range of called preset number: 1-20

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;


2. Press the tracing/preset mode switch key  to switch to preset mode, and indicator on this key goes off;

3. Press the store/recall mode switch key  to switch to calling mode, where indicator on this key lights up in green;

4. Press preset mode switch key  to switch to FADE preset mode, where indicator on this key lights up in green;

5. Press preset extension key  to select 1-10 or 11-20 for the preset number. When the [10+] indicator lights up in blue, the [1]-[10] keys on the preset selection area correspond to preset number 1-10, and when the [10+] indicator goes off, the [1]-[10] keys on the preset selection area correspond to preset number 11-20;

6. Press one of the [1]-[10] keys on the preset selection area to call corresponding preset position. The called preset number is displayed on the 4-bit digital display [SHOT]

 . After pressing, the pan/tilt head and the camera turns to the start of the preset position, during which the indicator on the corresponding preset selection key flashes;

7. After the pan/tilt head and the camera turns to the start position, press this preset selection key again to operate the preset position.

5.5 Trace Operations

When shooting along a specific trace is needed, the controller sends a trace command to the pan/tilt head. The system

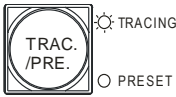
records the information about the front-end devices, and attaches them with the trace number. When the command is sent, the front-end devices will operate according to the recorded information of this trace to facilitate the shooting.

Operations like trace creation, trace preview, trace calling, etc. can be performed. To preview or store a trace, you need to create a trace first.


5.5.1 Trace Creation

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;

2. Press the tracing/preset mode switch

key  to switch to tracing mode, and indicator on this key lights up in green;

3. Press the preset start/stop key

 to start recording a trace.

The indicator on this key starts flashing, indicating that the current trace is recording, and recording time is displayed on the 4-bit digital display [TIME];

4. After starting recording, all the operations of the front-end devices


are recorded. Press start/stop key



to stop recording as you need. After pressing, its indicator goes off and a complete trace is created.

Note:

- The longest operation time of a trace is 60 seconds, after which if the operation is not stopped, the 4-bit


digital display  starts flashing and the buzzer raises a sound alarm;

- Operations after 60 seconds are void and not be recorded.

5.5.2 Trace Preview

After creating a trace, you can preview it to check if it meets the requirements.

1. Creating a trace as described in 5.5.1 of this chapter;

2. Press the trace preview key 

to preview it. During the front-end devices is turning to the start of the

trace, the indicator on this key remains flashing, and when they reach the start position, this key remains on. Then they start operating along the trace, and the countdown time is displayed on the 4-bit digital



3. After finishing preview, the preview key goes off and the digital display [TIME] is cleared.

5.5.3 Trace Storage

1. Creating a trace as described in 5.5.1 of this chapter;
2. Press the store/recall mode switch

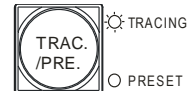
key  to switch to storage mode, where indicator on this key lights up in green;

3. Press one of the preset selection keys to appoint a number for the trace to be stored. The [MEMO] indicator goes off, indicating that the trace is stored.


5.5.4 Trace Calling

1. Ensure the correct connections of the system and between the pan/tilt head and the controller;

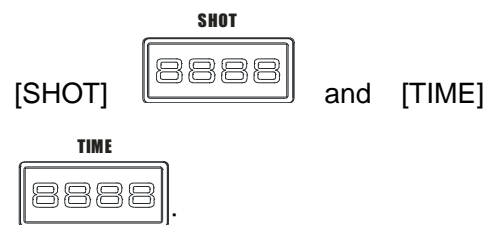
2. Press the tracing/preset mode switch

key  to switch to tracing mode, and indicator on this key lights up in green;

3. Press the store/recall mode switch

key  to switch to calling mode, where indicator on this key goes off;

4. Press the trace/preset selection key to select the trace to be called. Then the front-end devices start to turn to the start of the trace, during which the corresponding key remains flashing. The trace number and the operation time of the trace is displayed respectively on the 4-bit digital display




5. After the front-end device reaches the start position, press the corresponding trace/preset selection key again to make the devices start operating along the trace. After pressing, the indicator on this key stops flashing, and the countdown time is displayed on the 4-bit digital

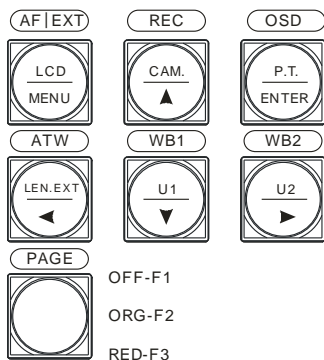
display[SHOT] ;


- After finishing trace calling, the 4-bit digital display [SHOT] stops flashing and [TIMES] is cleared.





5.6 Camera Menu Operations


- Confirm the correct connections of the system and among the controller, pan/tilt head and camera;

- Press the mode switch key  to switch to F3 mode, where indicators on the camera-menu-related keys light up in red;




- Press the key  to open/close the camera menu. The [MENU] indicator lights up in Orange or red respectively when pressed or released;

- On the camera menu, press [\uparrow]  / [\downarrow]  / [\leftarrow]  / [\rightarrow]  keys to move the cursor up/down/left/right. Their indicators light up in Orange and red respectively when the keys are pressed and released.

- Press [ENTER]  key to confirm an operation.


Note: the secondary menu key




and cancel key  are only applicable for cameras with secondary menu.

5.7 Camera and Lens Setup

5.7.1 Setup of Lens Operation Direction

1. Press mode switch key [PAGE]  to switch to F2 mode, where the indicators on this key and

on [LCD] key  light up in Orange;

2. Press [CON.] key  to enter the controller setup menu as follows:

CON. MENU 1/3
→P.DIR: NORMAL
T.DIR: NORMAL
Z.DIR: NORMAL

3. Turn F1 knob to select the item to be set^{*1}, and turn F2 knob to select an option and save settings^{*2}.


Items and options:

- Z.DIR: select zoom direction (options: NORMAL, REVERSE);
- B.DIR: select zoom direction for rocker potentiometer (options: NORMAL, REVERSE);
- F.DIR: select focus direction (options: NORMAL, REVERSE);
- I.DIR: select IRIS control direction (options: NORMAL, REVERSE).

^{*1} turn F1 knob clockwise to scroll down and counterclockwise to scroll up.


^{*2} turn F2 knob clockwise to select the next option and counterclockwise to select the last option. Press down F2 knob to save the settings when the SAVE item is set to YES.

5.7.2 Lock of Zoom/Focus with Joystick

Press the Zoom/Focus key  or the button on the top of the joystick to lock/unlock the function of Zoom/Focus. When the function is locked or unlocked, the indicator on the focus/zoom key goes off or lights up, accordingly.


5.7.3 Camera Setup

1. Confirm the correct connections of the system and among the controller, pan/tilt head and camera;

2. Press the mode switch key  to switch to F2 mode, where the [PAGE] indicator and [LCD]



indicator light up in Orange;

3. Press [CAM] key  to enter camera setup menu as follows (taking DK-H100 as example):

Item	Options	Function
WB MODE	AUTO, MEMO, 3200, 5600, 6300, 8000	White balance mode setup
SHUTTER	OFF, 1/100, 1/250, 1/500, 1/1000, 1/2000	Shutter setup
ND	CLR, ND1, ND2, ND3	Set Camera ND Filter
GAIN MODE	AUTO, MANU	Set Gain mode
GAIN SET	0db~40db	Gain setup (applicable only when gain mode is MANU)
AGC MAX	0db~24db	Maximum value of auto

		gain
R.GAIN	-127~+127	Red gain setup
B.GAIN	-127~+127	Blue gain setup
M.BLACK	-127~+127	Master black level setup
AWB	!	Auto white balance
ABB	!	Auto black balance
VD/BAR	VD, BAR	Output switch between video and colorful bar
DTL	-127~+127	Detailed level setup
FILE	PRESET, 1, 2, 3, 4	File selection
SAVE	PRESET, 1!, 2!, 3!, 4!	File storage

4. Turn F1 knob to select the item to be set^{*1}, turn F2 knob to select an option and press F2 knob down to confirm^{*2}.


^{*1} turn F1 knob clockwise to scroll down and counterclockwise to scroll up.

^{*2} turn F2 knob clockwise to select the next option and counterclockwise to select the last option. Press down F2 knob to confirm an item with a “!” mark.

5.8 Communication Method Selection and Network Parameter Setup

The controller communicates with the pan/tilt head through RS422 protocol or TCP/IP protocol as required. Select communication method and set network parameters with caution, or the pan/tilt head and camera will not function correctly.

5.8.1 Communication Method Selection

1. Press the mode switch key  to switch to F2 mode, where the [PAGE] indicator and [LCD] indicator light up in Orange;

2. Press controller menu key  to enter controller menu as follows:

CON. MENU 1/3
→P.DIR: NORMAL
T.DIR: NORMAL
Z.DIR: NORMAL

3. Turn F1 knob to select the item to be set^{*1}, and turn F2 knob to select an option and save settings^{*2}.

Items and options:

- LINK MODE: communication method setup (options: RS422, TCP).

Note: change of the communication method will not be valid until it is saved.


4. Turn F1 knob to select SAVE, turn F2 knob to select "YES!", and press down F2 knob. Then the option of SAVE changes to DONE, indicating that communication method change is completed.

Note: see the communication method of current camera on the main interface. "NORMAL-422" or "NORMAL-TCP" is shown respectively under RS422 mode or TCP/IP mode (when joystick is not moved).


^{*1} turn F1 knob clockwise to scroll down and counterclockwise to scroll up.

^{*2} turn F2 knob clockwise to select the next option and counterclockwise to select the last option. Press down F2 knob to confirm an item with a "!" mark.

5.8.2 Network Parameter Setup

1. Press the mode switch key  to switch to F2 mode, where the [PAGE] indicator and [LCD]

indicator  light up in Orange;

2. Press controller menu key  to enter controller menu as follows:

CON. MENU 2/3
I.DIR: NORMAL
LIMIT: NORMAL
ELE.S: NORMAL
DOL.S: NORMAL
→LINK MODE: TCP

3. Turn F1 knob to select LINK MODE, and turn F2 knob to select TCP;
4. Press down F2 knob to enter network parameter setup as follows:

NET. MENU	
→LOCAL PORT:	6000
LOCAL IP:	
169.254.175.251	
SUB-MASK:	
255.255.255.000	

GATEWAY:	
169.254.175.001	
REMOTE IP:	
169.254.175.001	

REM. PORT:	Far-end IP
10001	
192.168.000.003	
SAVE: YES!	Storage option

*Note: Set Remote port ID the same as Robotic head local port.

- Turn F1 knob to select the item to be set (for example, turn F1 to select LOCAL IP to set it). Press down F2 knob. The parameter to be set will be underlined as follows:

→LOCAL IP:	Local IP
<u>169.254.175.001</u>	

- Turn F1 knob to select among different parameters under an item. Turn F2 knob to adjust selected parameter, or press preset selection keys [1]-[10] to manually input the parameter ([10] key corresponds "0");
- After the setup of current item is done, press down F2 knob again to exit;
- Subnet mask, gateway and remote port number can be set as described in Step 6. Set the remote port number by turning F2 knob and using preset selection keys without pressing down F2 knob;
- After the setup is done, turn F1 knob to select SAVE, turn F2 knob to change its option to "YES!", and press down F2 knob to save the settings;
- After the setup is saved, the controller reboots automatically and after that new setup will become valid.

Note: turn F1 knob clockwise to scroll down and counterclockwise to scroll up; Turn F2 knob clockwise to select the next option and counterclockwise to select the last option.

5.9 Operations in Exceptional Cases

- To reset to factory default

- (1) Disconnect the controller's main power supply
- (2) Press down F1 knob, F2 knob and knob on the FINE TUNE area simultaneously
- (3) Connect the controller to physical power supply
- (4) During the reset, "SET DEFAULT" is shown on the interface. After the reset is done, the controller reboots automatically and after that the controller is reset to Factory Settings.

Caution: All the parameters the system saved will be reset to default values, so this operation is suggested to be done by professionals, or the controller may malfunction.

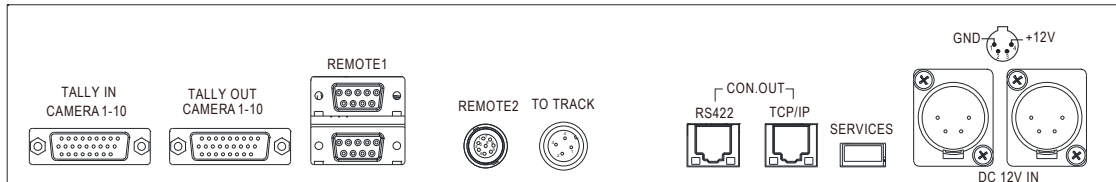
6. Abnormal Working Mode

LINK ERR

To ensure reliability, the controller and pan-tilt heads shall be connected at all time. If the controller fails to receive message from a pan-tilt head within 6 seconds, it will raise an alarm. The initial interface will appear on the controller display, and the corresponding selection key flashes. You can troubleshoot from the following 2 methods if such situation occurs:

- (1) If there is something wrong with line connection between controller and pan-tilt head, check and verify line sequences and disconnection situation;
- (2) If controller address is inconsistent with pan-tilt head address, check whether current pan-tilt head address is consistent with controller address;

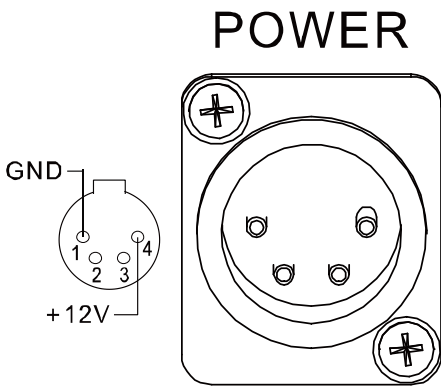
7. Back Panel Interface



Notice:

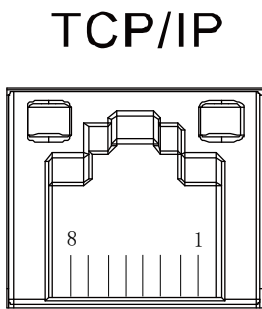
- ◆ Use attached AC adapters. Two-way power may be applied separately or simultaneously;
- ◆ SERVICE interface is for repair purpose , and is not available temporarily.

7.1 Power Interface



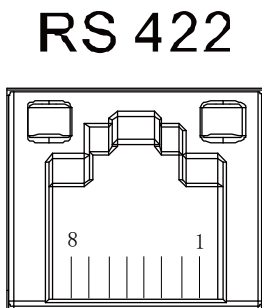
Pin No.	Definition
1	GND
4	+12V power
2,3	NC

7.2 TCP/IP Control Interface



Pin No.	Definition
1	Tx+
2	Tx-
3	Rx+
6	Rx-
4,5,7,8	NC

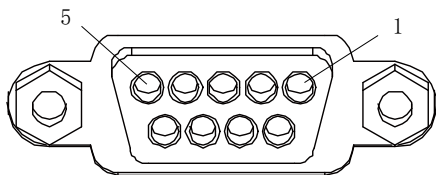
7.3 RS422 Control Interface



Pin No.	Pin definition
3	Tx-
4	Rx-
5	Rx+
6	Tx+
8	GND
1,2,7	NC

7.4 Auxiliary Interface

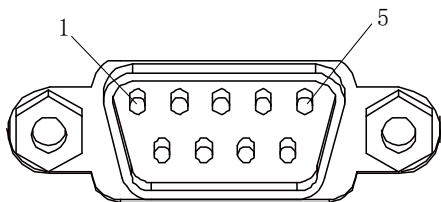
REMOTE1 interface is to implement auxiliary control. Under RS422 mode, RS422 interface of auxiliary controllers is conversed and then connected to DB9 (mother) interface of REMOTE1 so as to enable several controllers to control multiple cameras and pan-tilt heads. This way is called the RS232 control, through which you can control pan-tilt heads and cameras concerned via controllers in all links.



Pin No.	Definition
2	TXD
3	RXD
5	GND
1,4,6,7,8,9	NC

7.5 Video Output Linkage Interface

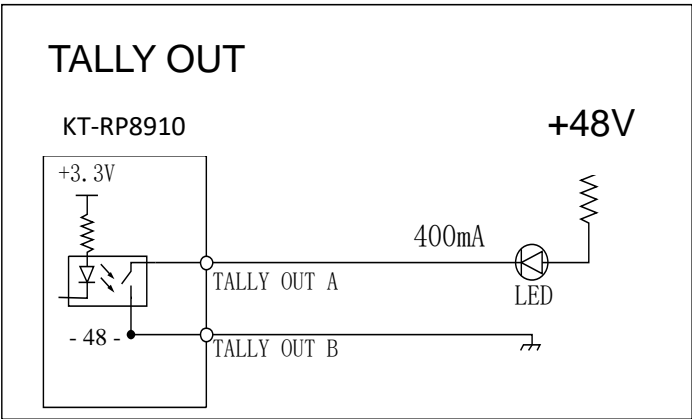
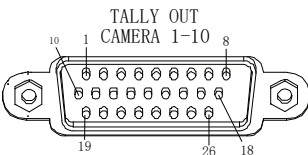
REMOTE1 DB9 (public) interface is to achieve video switch linkage. This way is called the RS232 control. When switching to another camera, REMOTE1 interface will send message of video signal change.



Pin No.	Definition
2	RXD
3	TXD
5	GND
1,4,6,7,8,9	NC

7.6 External Control Signal Output Interface

TALLY OUT 1 to TALLY OUT 10 output interfaces allow this device to output status to external sources.

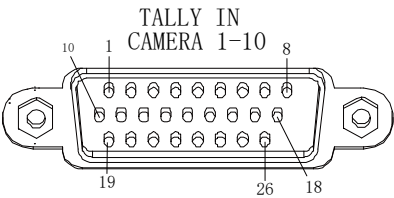


TALLY OUT PIN DEFINITION TABLE

Pin	Signal	Description
1	TALLY OUT 1A	Output signal 1 channel A
2	TALLY OUT 1B	Output signal 1 channel B
3	TALLY OUT 2A	Output signal 2 channel A
4	TALLY OUT 2B	Output signal 2 channel B
5	TALLY OUT 3A	Output signal 3 channel A
6	TALLY OUT 3B	Output signal 3 channel B
7	TALLY OUT 4A	Output signal 4 channel A
8	TALLY OUT 4B	Output signal 4 channel B
10	TALLY OUT 5A	Output signal 5 channel A
11	TALLY OUT 5B	Output signal 5 channel B
12	TALLY OUT 6A	Output signal 6 channel A
13	TALLY OUT 6B	Output signal 6 channel B
14	TALLY OUT 7A	Output signal 7 channel A
15	TALLY OUT 7B	Output signal 7 channel B
16	TALLY OUT 8A	Output signal 8 channel A
17	TALLY OUT 8B	Output signal 8 channel B
19	TALLY OUT 9A	Output signal 9 channel A
20	TALLY OUT 9B	Output signal 9 channel B
21	TALLY OUT 10A	Output signal 10 channel A
22	TALLY OUT 10B	Output signal 10 channel B
9, 18, 23, 24, 25, 26	GND	GROUNDING

7.7 External Control Signal Input Interface

TALLY IN 1 to TALLY IN 10 input interfaces allow external sources to control this device's signal.



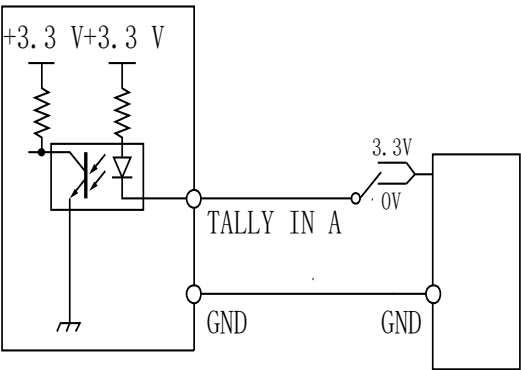
Description:

External input signal may be level or node input signal. The former uses 0V and 3.3V power.

TALLY IN CONNECTION METHODS

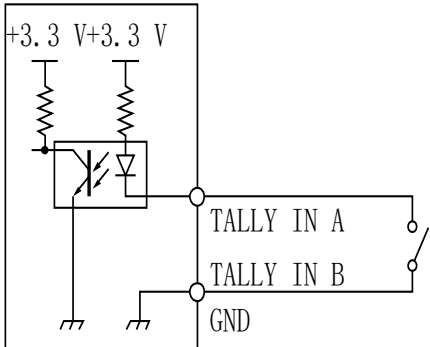
NODE: $\geq 50\text{ms}$

KT-RP8910



METHOD 2: LEVEL Input

KT-RP8910



METHOD 2: NODE Input

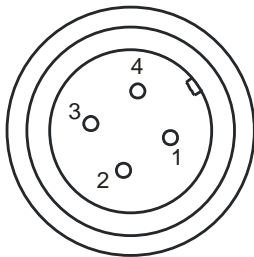
TALLY IN PIN DEFINITION TABLE

Pin	Signal	Description
1	TALLY IN 1A	Input signal 1 channel A
2	TALLY IN 1B	Input signal 1 channel B
3	TALLY IN 2A	Input signal 2 channel A
4	TALLY IN 2B	Input signal 2 channel B
5	TALLY IN 3A	Input signal 3 channel A
6	TALLY IN 3B	Input signal 3 channel B
7	TALLY IN 4A	Input signal 4 channel A
8	TALLY IN 4B	Input signal 4 channel B
10	TALLY IN 5A	Input signal 5 channel A
11	TALLY IN 5B	Input signal 5 channel B
12	TALLY IN 6A	Input signal 6 channel A
13	TALLY IN 6B	Input signal 6 channel B
14	TALLY IN 7A	Input signal 7 channel A
15	TALLY IN 7B	Input signal 7 channel B
16	TALLY IN 8A	Input signal 8 channel A
17	TALLY IN 8B	Input signal 8 channel B
19	TALLY IN 9A	Input signal 9 channel A
20	TALLY IN 9B	Input signal 9 channel B
21	TALLY IN 10A	Input signal 10 channel A
22	TALLY IN 10B	Input signal 10 channel B
9, 18, 23, 24, 25, 26	GND	Grounding

7.8 Track Elevating Interface

TO TRACK interface is to connect track elevator. This way is called the RS232 control. The specific interface definition is given below:

TO TRACK

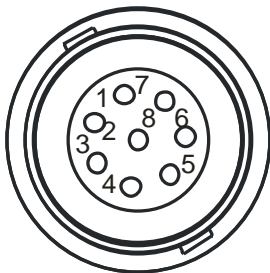


Pin No.	Definition
1	TXD
2	RXD
3	GND
4	VCC(12V)

7.9 REMOTE2 Interface

REMOTE2 interface is to connect RCP to control camera. This way is called the RS422 control. The specific interface definition is given below:

REMOTE2



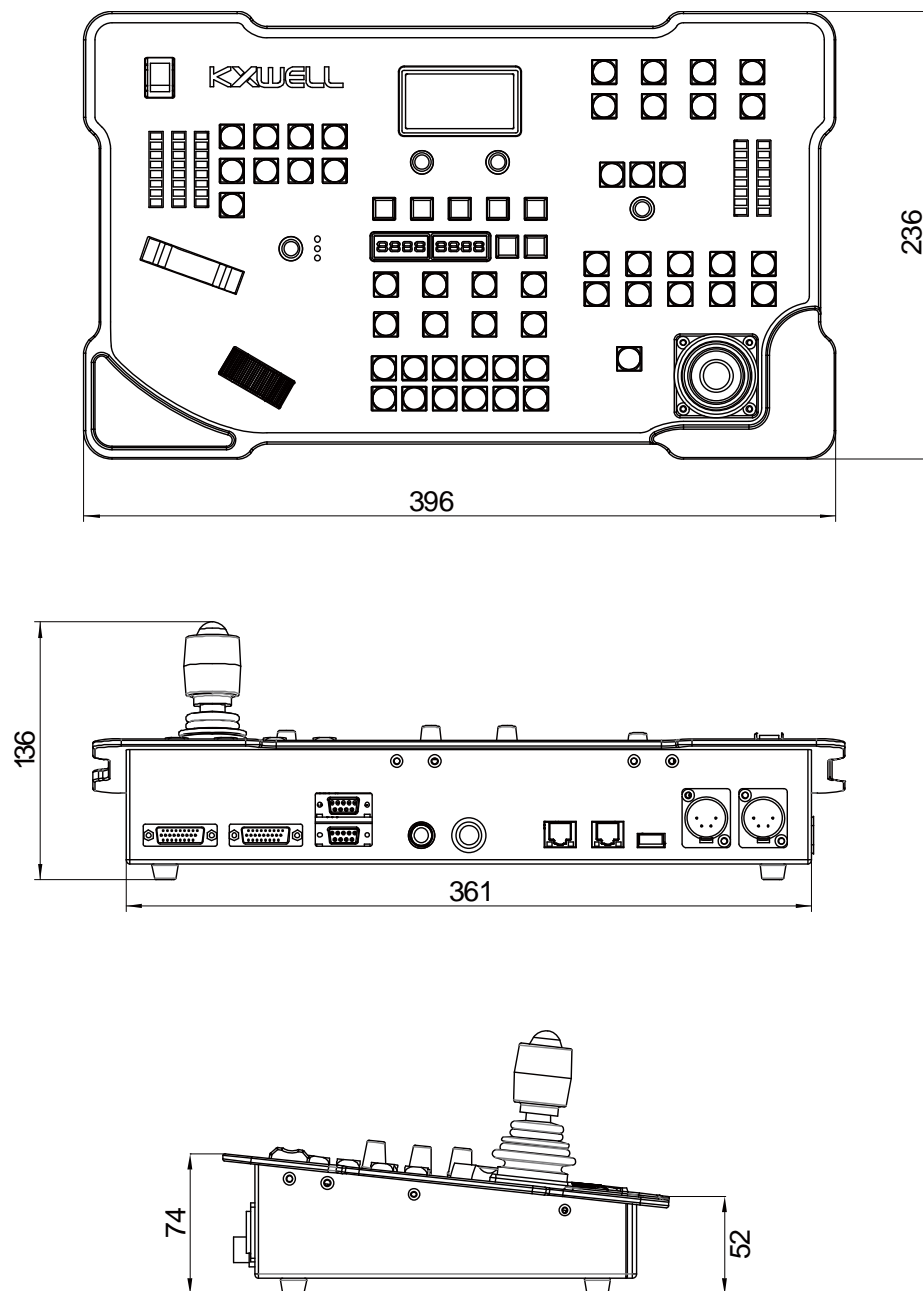
Pin No.	Pin definition
1	VCC(12V)
2	VCC(12V)
3	GND
4	GND
5	Tx+
6	Tx-
7	Rx-
8	Rx+

8. Technical Specifications

Item	Parameters
IRIS control	Manual, auto, lock
System capacity	10
Presetting bit	1,000 (custom-made)
Remote ON/OFF, remote limit setting	Supported
Quick parameter setting of camera	White balance, black balance, white balance mode, gain (manual/auto), red gain, blue gain, color bar, scene file, shutter, focus mode switch, etc.
Remote menu adjustment of camera	Support
Compatibility	Compatible with different cameras and pan-tilt heads
Linkage switch of video switcher	Support
Control interface	CON.: RJ45 [10BaseT CAT5 UTP, up to 1,200m long, connecting main keyboard and front end] TCP/IP: RJ45 [10BaseT CAT5 UTP] SERVICES: factory repair interface
Power supply	DC12V±10% 3000mA
Working temperature	-10℃ to +45℃
Working humidity	≤85% (non-condensing)
Storage environment temperature	-20℃ to +60℃
Dimensions (L×W×H mm)	396mm×236mm×135mm (including rocker)
Weight	About 3.5kg

.9. Dimensions

Unit: mm



10. Troubleshoot

Description	Cause	Solution
When you toggle OPERATE, there is no response.	1. This device is running under +12V DC 3A.	1. Check whether POWER interface of this device is connected; 2. Check whether power supply on-site is normal; 3. Change another power supply to confirm.
Controller is powered on and running. But you cannot control pan-tilt head and camera via the controller, and there is no response when you operate.	1. Controller must be connected in the same way as pan-tilt head. 2. Communication protocols of controller and pan-tilt head must be the same.	1. Under RS422 mode, check if RS422 output interfaces of this device and pan-tilt head are connected to communication distributor or pan-tilt head. Under TCP/IP mode, check if TCP/IP interfaces of this device and pan-tilt head are connected to router 2. Check if communication protocols of the controller and pan-tilt head are the same. If not, reset to keep them same.
Control fails when connected to pan-tilt head via TCP/IP.	Network parameters of controller and pan-tilt head must be configured correctly.	1. If it is under LAN control, please ensure IP addresses of controller and pan-tilt head are in the same network segment, and have no conflict. 2. If it is under public network control, please ensure interfaces are correctly mapped, and network is smooth. 3. When [NOTE] of Line 3 shows NORMAL-TCP in the main interface of the controller, you can control pan-tilt heads and cameras normally.

KXWELL International PTE LTD

Website: [http: //www.kxwell.com](http://www.kxwell.com)

Product design and specifications are subject to change without further notice.